EXPLANATION OF THE PLATES.

Plate I.

Fig. 1. *Distichopora granulosa*, natural size, showing ampullæ.
Fig. 1 *a*. Ditto: pore-rows, magnified.
Fig. 1 *b*. Ditto: dactylopores, with ridges of the surface, seen laterally, magnified.
Fig. 1 *c*. Ditto: ampulla, magnified.
Fig. 2. *Distichopora ochracea*, natural size, showing ampullæ.
Fig. 2 *a*. Ditto: pore-rows, magnified.
Fig. 2 *b*. Ditto: ampulla, magnified.
Fig. 2 *c*. Ditto: gastro-canal in section, magnified.
Fig. 3. *Distichopora conferta*, natural size, showing ampullæ.
Fig. 3 *a*. Ditto: pore-rows and part of surface, magnified.
Fig. 3 *b*. Ditto: ampulla, magnified.
Fig. 4. *Zygophylax profunda*: portion of hydrophyton, natural size.
Fig. 4 *a*. Ditto: branch, magnified.
Fig. 4 *b*. Ditto: hydrotheca and nematophore of one side, magnified.
Fig. 4 *c*. Ditto: part of fascicled stem, magnified.
Fig. 5. *Streptocaulus pulcherrimus*: proximal part of stem, magnified.
Fig. 5 *a*. Ditto: reproductive appendage with gonothecæ, magnified.
Fig. 5 *b*. Ditto: gonotheca, magnified.

Plate II.

Fig. 1. *Cryptolaria conferta*: part of stem with gonotheca, magnified.
Fig. 2. *Plumularia variabilis*: part of stem with pinna and gonotheca, magnified.
Fig. 2 *a*. Ditto: part of another pinna, magnified.
Fig. 3. *Plumularia delicatula*: portion of stem with gonotheca and pinnæ, magnified.
Fig. 4. *Antennularia irregularis*: stem, showing arrangement of ramuli.
Fig. 4 *a*. Ditto: part of stem with ramuli, magnified.
Fig. 4 *b*. Ditto: gonotheca, magnified.
Fig. 5. *Antennularia profunda*: stem, showing arrangement of branches and ramuli.
Fig. 5 *a*. Ditto: portion of stem, proximal part, magnified.
Fig. 5 *b*. Ditto: portion of stem, distal part, magnified.
Fig. 5 *c*. Ditto: portion of ramulus, magnified.

II.—*Notes to the Australian Sponges recently described by Carter**. By Dr. R. v. Lendenfeld, in Sydney.

As I am just now engaged in writing a Monograph of the Australian Sponges I was particularly glad to receive the

* H. J. Carter, "Description of Sponges from the Neighbourhood of Port Phillip Heads, South Australia," Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 196.

publications on the subject by Carter, through the courtesy of the author.

There are, in the part concerning the Ceraospongiæ and Myxospongiæ, no figures, and the diagnoses are so short that it is, in by far the greater number of species, impossible for me to identify them with those in my collection, or to ascertain those characteristics which I consider as the most important.

There are a few, however, which, in consequence of some accessory peculiarity or other, I have been able to recognize. My collection of several thousand specimens of Australian Sponges is by far the finest as yet brought together from any one locality, and I think that not only Carter, but also all other scientists who are working at the Sponges, will be interested in the result of a comparison between Carter's diagnoses and the specimens in my collection.

*Halisarca australiensis** is not a sponge at all, but the crusts described by Carter under the above name are the ova of *Boltenias* surrounded by their folliculi. I myself believed that the slimy coatings in question were perhaps sponges, and I examined them accordingly. The results of this examination are laid down in a paper published by me last year†.

The *Boltenia* is probably *Boltenia australis.* The name *Boltenia australiensis* given by Carter‡ is not warranted.

Chondrilla uncula, O. S., is mentioned as occurring in Port Phillip §. I have not found any specimens of this sponge on any part of the Australian coast. I have, however, described a species of *Chondrilla* as *C. secunda*, n. sp., from Port Phillip, in a paper read some time ago before the Linnean Society of N. S. W. ‖, which is somewhat different from *C. uncula*, O. S., in the shape of its spicules and particularly the configuration of the canal-system, but which outwardly appears very similar to the Adriatic species, of which I brought a specimen with me. I think it very probable that Carter's specimen is to be referred to my *Chondrilla secunda*, a sponge very abundant in Port Phillip.

* H. J. Carter, "Description of Sponges from the Neighbourhood of Port Phillip Heads, South Australia," Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 197.

† R. v. Lendenfeld, "On the Slimy Coatings of certain Boltenias in Port Jackson," Proc. Linn. Soc. N. S. W. vol. ix. p. 495.

‡ H. J. Carter, *l. c.* p. 197.

§ H. J. Carter, *l. c.* p. 200.

‖ R. v. Lendenfeld, "A Monograph of the Australian Sponges," Abstracts of Proc. Linn. Soc. for January 1885.

*Luffaria digitata** is very meagrely described, but I think it highly probable that it is identical with a sponge described eighteen years ago by Selenka† as *Spongilia cactos*, and which has been investigated by F. E. Schulze‡ and myself§. Carter has, apparently, not seen my paper on Sponges of Port Phillip, otherwise I think that my description of this sponge would have been sufficient for identification. I have named it *Dendrilla rosea*, which name, having priority, ought to replace the name *Luffaria digitata* given by Carter‖. The most important feature of the sponge is its peculiar subdermal cavity. Carter does not mention this; but as he does not say anything about the canal-system at all, it is probable that he never examined any section-series.

Darwinella australiensis¶ is represented in my collection, but the canal-system is not described by Carter, so that it is difficult to identify the species.

With *Aplysina lævis*** of Carter, seven distinct species in my collection might be identified. These are very different from one another, but all coincide with Carter's diagnosis of the above species. They are forms which lead to the Dysideidæ of Marshall††, of which Carter's *Pseudoceratina durissima*‡‡ may be a true representative.

The diagnosis given by Carter of *Aplysina purpurea*§§ led me to believe that it might be identical with a sponge examined by me and named *Aplysilla violacea*‖‖; but now it

* H. J. Carter, "Description of Sponges from the Neighbourhood of Port Phillip Heads, South Australia," Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 201.

† E. Selenka, "Ueber neue Schwämme aus der Süd-See," Zeitschrift für wissenschaftliche Zoologie, Band xvii. Seite 566, Tafel xxxv. fig. 5.

‡ F. E. Schulze, "Untersuchungen über den Bau und die Entwickelung der Spongien," Zeitschrift für wissenschaftliche Zoologie, Band xxx. Seite 379.

§ R. v. Lendenfeld, "Ueber Cœlenteraten der Süd-See.—II. Neue Aplysinidæ," Zeitschrift für wissenschaftliche Zoologie, Band xxxviii. Seite 271 ff.

‖ H. J. Carter, *l. c.* p. 201.

¶ H. J. Carter, *l. c.* p. 203.

** H. J. Carter, *l. c.* p. 204.

†† William Marshall, "Ueber Dysididen und Phoriospongien," Zeitschrift für wissenschaftliche Zoologie, Band xxxv. Seite 92.

‡‡ H. J. Carter, *l. c.* p. 204.

§§ H. J. Carter, "Contributions to our Knowledge of the Spongida.—Order II. Ceratina," Ann. & Mag. Nat. Hist. ser. 5, vol. viii. pp. 103–105.

‖‖ R. v. Lendenfeld, *l. c.* Seite 237 ff.

seems that this is not the case, as Carter considers the Australian specimen of that sponge to be identical with his *Pseudoceratina durissima* *.

Carter's new genus *Holopsamma* † is identical with Marshall's genus *Psammopemma* ‡, established five years ago, and the latter name must be accepted accordingly as having priority.

The species described as *H. crassa* § and *H. lævis* ‖ cannot be distinguished. I possess in my collection numerous transition forms between them, and all these ought to be combined under the name given to them previously by Marshall¶, viz. *Psammopemma densum*. I think, however, that I shall be able to distinguish a few species, as the canal-system is not the same in all the specimens I have examined. It is, however, a matter of quite unusual difficulty to make good series of sections through these arenaceous sponges.

Holopsamma laminæfavosa ** may be identical with Marshall's genus *Psammodema* ††.

Both *Holopsamma fuliginosa* ‡‡ and *H. turbo* §§ are unrecognizable.

The establishment of a new genus *Sarcocornea* ‖‖ for a dry *Dysidea* is not justified. In the diagnosis there is nothing by which the only species could be distinguished from *Dysidea*.

Dysidea fragilis, Johnston ¶¶, and *Dysidea Kirkii*, Bowerbank***, are mentioned. I only possess the latter in my collection. Chaliniform species are very abundant, and I possess long series of continuous transition-forms. I believe this shape to be a mimicry of the true Chalinidæ, which, in consequence of their axial spicules, would not be very digestible food.

I cannot say anything about the species described as *Dysidea hirciniformis*††† and *chaliniformis* ‡‡‡. The descrip-

* H. J. Carter, "Description of Sponges from the Neighbourhood of Port Phillip Heads, South Australia," Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 205.

† H. J. Carter, *l. c.* 211.

‡ William Marshall, "Ueber Dysididen und Phoriospongien," Zeitschrift für wissenschaftliche Zoologie, Band xxxv. Seite 113.

§ H. J. Carter, *l. c.* p. 211.
‖ H. J. Carter, *l. c.* p. 212.
¶ W. Marshall, *l. c.* Seite 113.
** H. J. Carter, *l. c.* p. 212.
†† W. Marshall, *l. c.* Seite 109.
‡‡ H. J. Carter, *l. c.* p. 213.
§§ H. J. Carter, *l. c.* p. 213.
‖‖ H. J. Carter, *l. c.* p. 214.
¶¶ H. J. Carter, *l. c.* p. 215.
*** H. J. Carter, *l. c.* p. 216.
††† H. J. Carter, *l. c.* p 217.
‡‡‡ H. J. Carter, *l. c.* p. 217.

tions are so short that it is simply impossible to make any use of them.

I consider the genus *Dysidea* as characterized by the following points:—

1. Transparent hyolin. Mesoderm without foreign bodies in the ground-substance.
2. The canal-system and ciliated chambers of *Spongelia* as described by Schulze*.
3. Foreign bodies forming all the fibres.

It cannot of course be decided by the description whether Carter's specimens belong to the genus *Dysidea* in this sense or not.

The sponge described by Carter as *Spongelia stellidermata*† is probably identical with some specimens in my collection, which, however, do not belong to the genus *Spongelia*, but to another family‡, that of the Spongidæ. I have named this sponge *Cacospongia gracilis* §; but it may appear necessary to establish a new genus for it. At all events it does not belong to the genus *Spongelia*, Schulze, who was the first to establish a diagnosis on a really reliable and scientific basis ‖.

Carteriospongia caliciformis¶ is described from a dry specimen, so that no opinion can be hazarded on its real position in the system.

As the configuration of the canal-system is not described and the microscopic structure of the soft parts generally hardly referred to, and as these are considered all important by me, it is only natural that I should not be able to utilize Carter's essay. Just as it was necessary that O. Schmidt should com-

* F. E. Schulze, "Untersuchungen über den Bau und die Entwicklung der Spongien: Die Gattung *Spongelia*," Zeitschrift für wissenschaftliche Zoologie, Band xxxii. Seite 117 ff.

† H. J. Carter, "Description of Sponges from the Neighbourhood of Port Phillip Heads, South Australia," Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 219.

‡ J. Vosmaer, "Studies on Sponges.—I." Mittheilungen der zoologischen Station in Neapel, Band iv. Seite 445. Vosmaer's classification is identical with mine, which I arrived at independently, and which is therefore very likely to be correct.

§ In 1883 I identified the sponges from several museums, and I supplied several with names, the diagnoses of which remained in schedule. The sponges referred to can be seen in the museum of the South Australian Institute at Adelaide.

‖ F. E. Schulze, *l. c.*

¶ H. J. Carter, *l. c.* p. 221.

pare Bowerbank's species with his own, I find it advantageous to review Carter's essay from my point of view, so that in the future any one may be enabled to make use of it.

For any one who holds views similar to those of Polejaeff, Vosmaer, and myself, this review will be most welcome, as I, in possession of extensive collections and working the subject on the spot, am best able to judge.

III.—*On the* Teredo utriculus *of Gmelin, with Remarks upon other Ship-worms.* By Sylvanus Hanley, F.L.S. &c.

Until lately this ancient species, founded upon a well-executed drawing in Kämmerer (Conch. Cab. Rudolst. t. i.), was omitted, or neglected, in our lists of sea-shells. Of late it has been cited as a synonym of the *T. norvagicus* of Spengler, a conclusion which my recent examination of a most magnificent group acquired by me at Cannes from the wreck of a submerged Italian ship does not confirm. It may, indeed, be a variety, yet with differences in tube, valves, and pallets so perceptible that the untrained eye (I mean as to shells) of a portrait-painter immediately indicated them. I may remark that the *Fistulana corniformis* of Lamarck (as pictorially defined by a reference to Favanne) seems identical; the tube, at least, is closed at the broader end by a dome-shaped covering (as in the genus *Septaria*, =*Kuphus*), which with the bar-like stricture at the narrower extremity are the principal features exhibited in Kämmerer's plate. The pallets are more leaf-like and with shorter stalks than in *norvagicus*, the tube (besides its dome, which some say is present, although I have not myself found it) in all adult members of the genus is more fragile, and the thin valves easily distinguishable by their outline, the fang or central portion being broader and much shorter in proportion than in the solid dark-skinned northern shell to which it has been affiliated. The most striking character, however, is the large space occupied by the finely sculptured triangular area, which descends far down the broad fang.

The species (or variety, if you will) is a southern form; but I obtained many young specimens (valves only) from Guernsey, an outlying province of the Mediterranean fauna,